

Isolation,selection and molecular identification of biosurfactant-producing extremophilicbacteries from crude oil polluted soil

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Abstract

© 2016,International Journal of Pharmacy and Technology. All rights reserved.Ten bacterial strains with hydrocarbon degrading capacity were isolated from a soil sample that had been polluted with crude oil from the area of Surgut in Russian Federation. This area is characterized by its long winters,with an annual average temperature of-1.7°C. The isolated bacterial strains live and thrive at a very low temperature,which makes them ideal to be used in unfavorable environmental conditions for the majority of surfactants.In order to evaluate the biosurfactant production of these strains,the following methods were used: surface tension measurements,drop dispersion,hemolytic capacities assay and emulsification rate assay.These analysis showed that two of the strains,Bacillus subtilis and Klebsiellaoxytoca,was efficient biosurfactant producers. The surface tension decrease when using B.subtilisand K. oxytoca was 64.3% and 57.1% respectively. Drop dispersion was 33mm with B.subtilis and 28mm with K.oxytoca. The emulsification rate when using B.subtilis and K.oxytoca was 78.4% and 59.2% respectively. Our research has prospects to be applied both for microbial enhanced oil recovery (MEOR) and for bioremediation.

Keywords

Biosurfactant, Extremophilicbacteries, Hydrocarbon degrading bacteria, MEOR, Soil pollution